

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 – 36 (Cancelled)

37. (Currently Amended) A method of operating an internal combustion engine, the method comprising:

providing, in a housing having an exhaust port, a piston and a shaft, wherein over a course of rotation of the shaft, the housing and piston ~~there are~~ successively define, at least in part, defined volumes in differing amounts within the housing for phases of compression, combustion, and ~~expansion; expansion;~~

causing compression of a working medium, introduced through an intake port, by reducing volume in the compression phase from an initial volume to a second volume that is less than the initial volume;

causing combustion, in the combustion phase, while maintaining substantially constant volume of a combustion chamber defined by the housing and the piston, of fuel that has been introduced through a fuel port into the working medium; and

undergoing expansion, in the expansion phase, of gases from combustion while the volume increases to a third volume that is larger than the initial volume;

wherein the volumes defined by the housing and the piston vary ~~volume size varies~~, if at all, over the course of shaft rotation, to define successive defining ~~succesively~~ volumes in differing amounts for phases of compression, combustion, and expansion, in a manner that is smooth and continuous.

38. (Currently Amended) The method of operating an internal combustion engine of claim 37, the method further comprising providing a ~~wherein the~~ working medium that is selected from the group consisting of air and a mixture of air and fuel.

39. (Currently Amended) A method of operating an internal combustion engine according to claim 37, the method further comprising wherein the introducing fuel has been introduced to the working medium after the working medium has been compressed to the second volume.

40. (Currently Amended) A method of operating an internal combustion engine according to claim 37, wherein causing combustion comprises maintaining substantially constant volume of the combustion chamber defined by the housing and the piston such that the pressure of the working medium is such that ~~conditions under which~~ the fuel undergoes spontaneous ignition.

41. (Previously Presented) A method of operating an internal combustion engine according to claim 37, further comprising, using an energy recovery system to increase the heat of combustion of the fuel medium before it is introduced to the fuel port.

42. (Previously Presented) A method of operating an internal combustion engine according to claim 41, further comprising, using the energy recovery system additionally to reduce the temperature of the gases from combustion.

43. (Previously Presented) A method of operating an internal combustion engine according to claim 41, wherein using the energy recovery systems includes causing thermo-chemical decomposition of gaseous fuel.

44. (Previously Presented) A method of operating an internal combustion engine according to claim 43, wherein using the energy recovery systems includes causing a catalyst-assisted reaction occurring at a constant temperature between 450 degrees C and 750 degrees C.